

DescriptionA Capsule incorporating a Doser and Openable Security Cap, in particular for Single-dose Flagons.Technical Field

The invention relates to the field of single-dose flagons, in particular prevalently used for containing soft drinks.

Background Art

For some time now there has been a large market demand for mostly water-based drinks containing aromas, energy-enhancing substances, mineral integrators and other substances whose main aim to give the drink an especially pleasant taste plus special benefits, such as extra energy, mineral salt replacements and so on, all of which are considered beneficial to the human organism. These drinks are often presented to the public in single-dose containers, so that once the flagon is open the contents are immediately consumed and as a result no re-closure device is necessary. The following makes reference to this type of drink, though it is true that the same modus operandi is used for some medicinal products.

PCT application WO 03/093128, and WO 98/38104, both by the same applicant, teach preparation of the drinks immediately before use by insertion into water provided in one container (usually a plastic flagon) of the desired substances provided in special capsules, such as the ones described, for example, in the above-cited applications.

Document EP 0 356 758 discloses a closure in plastic material for monodose bottles having a reservoir with a breakable bottom, a cylindrical element with the lower end sideways cut being inserted in the reservoir, and also

including a sealing cap folded around the bottle neck, wherein a breaking line is provided, which extends all over the height of the cap, interconnected with a circular section which separates said cover from the upper flat wall. Document US RE 38 067 discloses a device enabling at least two substances to be stored separately, to be mixed together, and the resulting mixture to be dispensed. The device comprises a receptacle and at least one removable shutter suitable for separating, inside the receptacle, two chambers for respectively containing said substances prior to first use of the device, the device further including a pushbutton for moving on first use to cause said shutter to be removed or torn and to put the two chambers into communication with each other. The device comprises a gasket including a portion fixed to the receptacle and a deformable portion made of an elastically-deformable material suitable for deforming which the pushbutton is depressed so to accompany the movement thereof while simultaneously constituting a sealed barrier between the inside of the receptacle and the pushbutton.

Document FR 2 077 188 discloses a bottle enabling at least two substances to be stored separately, to be mixed together, and the resulting mixture to be dispensed. The device comprises a receptacle and at least one removable shutter suitable for separating, inside the receptacle, two chambers for respectively containing said substances prior to first use of the device, the device further including a pushbutton for moving on first use to cause said shutter to be removed or torn and to put the two chambers into communication with each other.

Document GB 1 403 274 discloses an assembly for separately storing and mixing two constituents. The assembly comprises a bottle having a threaded neck, an auxiliary container consisting of a first cup-shaped member sealingly-fitted in the bottle neck and a second cup-shaped member having an inverted light sliding-fit in the first member and adapted to rupture the weakened base of the first member when manually depressed to permit one constituent in the container to mix with the other in the bottle, and a screw cap having an internal tubular extension serving firstly to limit the initial screwing down of the cap by engagement with a flange of the first member, and secondly, to sealingly plug the bottleneck after mixing of the constituents and bodily removal of the auxiliary container. The second member has a lower diameter portion terminating in an oblique cutting edge and enlarged upper closed end for making a tight but sliding fit with an internal bead or rib on the first member. The screw cap, which is injection-moulded of plastic material, may be provided with a tamper-proof collar, connected to the body of the cap by frangible straps and having resilient

internal projections which co- operate with a ring of saw-teeth in the bottle neck so that the cap may be screwed down on to the neck but cannot be unscrewed without rupturing the frangible straps.

The capsules used for this purpose guarantee the flagons security but exhibit the problem of having an opening system that is slightly complex and awkward, in

particular if it is necessary to use both hands for the least possible time, as some people do, such as runners or cyclists who drink these beverages during their sporting activity. To open these containers it is necessary to grip the flagon and screw the cap with a certain force in order to break the security strip, and press the device containing the product in order to lacerate the capsule and cause the product to fall into the underlying liquid. Only at this point can the capsule be unscrewed easily in order to gain access to the contents of the flagon.

The main aim of the present invention is to realise a capsule which, apart from offering the same degree of security to evidence prior opening of the flagon and the same system to produce the drink immediately before consumption, also enables the opening operations to be carried out simply and rapidly.

A further aim is to provide a capsule whose opening, with respect to prior-art capsules, is more modern and pleasant for the user.

A further aim of the invention is to provide a relatively simply-constructed capsule.

### **Disclosure of Invention**

Further characteristics and advantages of the present invention will better emerge from the detailed description that follows of a preferred embodiment of the capsule of the invention, illustrated purely by way of non-limiting example in the accompanying figures of the drawings, in which:

figure 1 is an enlarged-scale section in vertical elevation of the capsule of the invention, inserted onto a flagon and with the upper part closed;

figure 2 shows the capsule of the invention, partially sectioned and inserted on a flagon, with the upper part opened.

In the figures of the drawings, 1 denotes a flagon having a mouth, located at an end of the neck 2, which is closed by a capsule 3 according to the invention.

The capsule 3 comprises a lower part 4 exhibiting an internal threading 7a, by

means of which the lower part 4 can be screwed onto a thread 7 afforded on the neck 2 of the flagon 1. A security strip 12 is provided on the lower part 4 of the capsule 3, which when the capsule 3 is unscrewed detaches therefrom and indicates that the flagon 1 has been opened for the first time. The security strip 12 in the embodiment is a ring, connected to the lower part 4 of the capsule 3 by means of easy-break ribs, which engages against an annular projection on the neck 2 of the flagon 1 and detaches from the capsule 3 when the lower part 4 thereof lifts following unscrewing. The strip 12, the function of which is entirely similar to those of other strips used for numerous types of capsules for flagons, can however be made differently to what is described above.

The lower part 4 of the capsule 3 is superiorly open towards the outside, and is superiorly closed by an upper part 5 of the capsule 3. The lower part 4 and the upper part 5 have a circular section and are connected to one another along external perimeter circumferences thereof, by an easy-break ribbing 13.

In substance, the upper part 5 and the lower part 4, generally made in a single piece, constitute the whole capsule 3 and before reciprocal detachment are integral, thus guaranteeing the security of the closure of the flagon. Differently to prior art capsules, where there is no possibility of removing the upper part of the capsule, the upper 5 and lower 4 parts are easily detachable from one another, as they are united only by an easy-break ribbing 13.

A recess 4a is provided to facilitate the detachment, the recess 4a being afforded in the lower part 4 of the capsule 3; another recess 5a is afforded in the upper part 5 of the capsule 3, and the two recesses 4a and 5a are arranged, when the capsule 3 is closed, i.e. when the upper part 5 is above the lower part 4, in such a way as to be facing each other and together to create an indentation 6 which is shaped like a human finger-tip. The user, by inserting a finger-tip into this indentation 6 (using a finger of the same hand that is holding the flagon) and pushing upwards,

easily breaks the easy-break ribbing 13 and detaches the upper part 5 of the capsule 3 from the lower part 4 .

A reservoir 8 is located internally of the capsule 3 and has a breakable bottom 8a. A cutting element 9 is included internally of the reservoir 8, and the reservoir 8 is inserted sealedly in the neck 2 of the flagon 1.

The substance to be dissolved in the drink (this will be better explained herein below) is contained internally of the reservoir 8, or internally of the cutting element 9 should the latter be hollow (as illustrated in figure 1) and occupying the internal space in the reservoir 8. The substance has the function of dissolving in the water contained in the flagon to prepare the drink, and will therefore preferably be soluble in water and will include all of the desired ingredients for making the final drink.

Means for coupling are included, which solidly couple the reservoir 8 and the lower part 4 of the capsule 3 in an upwards axial translation. The coupling means comprise an external ring 16, which is solidly constrained to the reservoir 8 and fashioned on an upper external part thereof. The coupling means exhibit a hook-shaped section, with the hooked part facing downwards; an internal annular projection 17 is also afforded on the internal surface of the lower part 4 of the capsule 3. When the capsule 3 is screwed on the neck 2 of the flagon 1, the projection 17 inserts below the ring 16 and makes the reservoir 8 and the lower part 4 of the capsule 3 solid in upwards translation.

When the capsule 3 is assembled, the cutting element 9 projects superiorly from the lower part 4 of the capsule 3 and the projecting part of the cutting element 9 is contained internally of the upper part 5 of the capsule 3. When the two parts 4 and 5 of the capsule 3 detach from one another, the upper part of the cutting element 9 projects and the user, using the same fingertip that broke the easy-break ribbing 13, can push the cutting element 9 downwards and cause the

rupturing of the breakable bottom 8a and the descent of the substance contained in the reservoir into the flagon 1. The reservoir 8 containing the substances, the cutting element 9, their conformation and mode of use are all known.

The described capsule is preferably used on single-dose flagons 1, usually small (a few decilitres) and made of plastic. This is because it is usually this size of container which is used for the one-hand type opening; but the capsule could be used on any type of flagon, bottle or other container having a neck.

When the drink is prepared for drinking, the flagon 1 is gripped with one hand, a fingertip of the same hand (usually the thumb) is inserted into the indentation 6 and with a slight upwards pressure the easy-break ribbing 13 is fractured and removed, or the upper part 5 of the capsule is raised if the detachment from the lower part 4 is not complete.

Using the same thumb or finger, the part of the cutting element 9 projecting from the lower part 4 is pressed, forcing the cutting element 9 to lower and rupture the breakable bottom 8a of the reservoir 8 and causing the substance in the reservoir 8 to fall into the flagon.

Then, by unscrewing the lower part 4 of the capsule 3 from the neck 2 of the flagon 1, a swift operation requiring very little time and which with a little practice can be done using two fingers of the same hand (e.g. thumb and forefinger) holding the flagon 1, the security strip 12 is detached and the reservoir 8 and cutting element 9 raised, with a consequent opening of the flagon 1 to afford access to the contents thereof.

Thus, with this single-piece capsule, apart from having a double security that neither the flagon nor the reservoir have been accessed before the capsule itself is opened, using one hand alone (the hand holding the flagon) the contents can be mixed and drunk very easily, a great advantage especially for some categories of consumers.

The capsule can be used for the preparation of various types of drink, and with flagons of various sizes. Obviously herein reference is made to a smaller type of flagon due to the fact that the capsule cannot be reclosed and also because one-handed opening is possible only if the container is not heavy.

## **Claims.**

- 1). A capsule (3) incorporating a doser and an openable security cap, in particular for single-dose flagons, comprising: a lower part (4) inferiorly bearing a security strip (12) of known type, the capsule (3) being provided with means for connecting which enable a removable insertion thereof on a neck (2) of a flagon (1); the capsule (3) including a reservoir (8), inserted sealedly in the neck (2) of the flagon (1), arranged internally of the lower part (4) of the capsule (3) and provided with a breakable bottom (8a); internally of which reservoir (8) a substance is contained, which substance is for inserting into the flagon (1) when the breakable bottom (8a) is ruptured; the capsule (3) also comprising a cutting element (9) for rupturing the breakable bottom (8a); wherein: the lower part (4) of the capsule (3) is superiorly open and is closed by an upper part (5) which is perimetricaly connected to the lower part (4) by means of an easy-break ribbing (13).
- 2). The capsule of claim 1, wherein the cutting element (9) superiorly projects from the lower part (4) of the capsule (3) and a projecting part of the cutting element (9) is contained internally of the upper part (5) of the capsule (3).
- 3). The capsule of claim 1, wherein the capsule (3) comprise a recess (4a) afforded in the lower part (4) of the capsule (3) and a recess (5a) afforded in the upper part (5) of the capsule (3); the recess (4a) and the recess (5a) being in line with one another in order to create, when the capsule (3) is closed, an indentation (6) in a shape corresponding to a human fingertip.
- 4). The capsule (3) of claim 1, wherein the means for connecting comprise a screw-coupling between the lower part (4) of the capsule (3) and the neck (2) of the flagon (1).

5). The capsule of claim 4, wherein the capsule (3) comprises means for coupling, for making the reservoir (8) and the lower part (4) of the capsule (3) solid in upwards axial translation; the means for coupling comprising: an external ring (16), solidly constrained to the reservoir (8) and fashioned on an upper external part thereof, a section of which external ring (16) is hook-shaped with a hooked part thereof facing in a downwards direction; an internal annular projection (17), fashioned on an internal surface of the lower part (4) of the capsule (3), for inserting below the external ring (16) when the capsule (3) is screwed on the neck (2) of the flagon (1).

**A Capsule incorporating a Doser and Openable Security Cap, in**  
**particular for Single-dose Flagons.**

**Abstract.**

The capsule (3) comprises a lower part (4) with a security strip (12) which is screwed on a neck (2) of the flagon (1) to be closed. The capsule also comprises a reservoir (8) inserted sealedly on the neck (2) of the flagon (1), the reservoir (8) being provided with a breakable bottom (8a); the lower part (4) of the capsule (3) being superiorly open in an outwards-facing direction and closed by an upper part (5) which is circumferentially connected to the lower part (4) by means of an easy-break ribbing (13).